CLAIMS

1. A method for cooling a stream of gaseous fluid, comprising steps wherein:

a) said stream is confined;

b) during step a), liquid nitrogen is sprayed into the stream to cool the gaseous fluid, and then

c) the cooled gaseous fluid is recovered, characterized in that before step b), it comprises a step wherein:

d) the gaseous fluid is slowed down by increasing the cross section of the stream.

2. The method as claimed in claim 1, characterized in that step c) is carried out only after the liquid nitrogen has completely vaporized in the stream.

3. The method as claimed in claim 1 or 2, characterized in that in step d), the stream is directed toward an impact surface (10).

4. The method as claimed in any one of the preceding claims, characterized in that after step b) and before step c), it comprises a step wherein:

e) the stream is stirred.

5. The method as claimed in claim 4, characterized in that in step e), the stream is stirred by sucking in the gaseous fluid by means of a turbomachine (13).

6. The method as claimed in claim 4 or 5, characterized in that in step e), the stream is stirred by deflection.

7. The method as claimed in any one of the preceding claims, characterized in that by adjusting the flow rate of liquid nitrogen sprayed in step b), the temperature of the gaseous fluid recovered in step c) is regulated about a preset temperature.

8. A method for cooling articles (24), characterized in that it includes the cooling method as claimed in any one of the preceding claims, and at

least one step in which the gaseous fluid recovered in step c) is sent onto the articles (24).

9. The method as claimed in claim 8, characterized in that the gaseous fluid is air.

10. A device for cooling a stream of gaseous fluid, comprising a mixing pipe (6) through which the stream should pass, and means (18) for spraying liquid nitrogen into this mixing pipe (6), characterized in that it comprises a pipe (5) for injecting the gaseous fluid into the mixing pipe (6), this injection pipe (5) being directed toward at least one impact surface (10) located inside the mixing pipe (6), and in that at least on a section containing the impact surface (10) and said spraying means (18), the mixing pipe (6) has a larger cross section than the cross section of the injection pipe (5).

11. The device as claimed in claim 10, characterized in that said spraying means comprise a spray nozzle (18) discharging into said mixing pipe (6) and turned substantially in the planned flow direction.

12. The device as claimed in claim 10 or 11, characterized in that the injection pipe (5) is engaged in the mixing pipe (6) via an upstream end (7) of this mixing pipe (6), said impact surface (10) being turned substantially toward this upstream end (7).

13. The device as claimed in one of claims 10 to 12, characterized in that said impact surface (10) is concave.

14. The device as claimed in any one of claims 10 to 13, characterized in that it comprises means (13) for stirring the gaseous fluid, these stirring means (13) being placed downstream of the spraying means (18).

15. The device as claimed in any one of claims 10 to 14, characterized in that it comprises a chamber (1) into which a downstream end (8) of the mixing pipe (6) discharges, the chamber (1) and the mixing pipe (6) together delimiting a calming passage (16) for the gaseous fluid, the chamber (1) possessing an exit (17)

for the gaseous fluid, located at the level of said calming passage (16).

16. The device as claimed in claim 15 as dependent on claim 14, characterized in that the stirring means (13) are placed upstream of said calming passage (16).

17. The device as claimed in claim 15 as dependent on claim 12, characterized in that the upstream end (7) of the mixing pipe (6) is open and located in the chamber (1).

18. The device as claimed in any one of claims 15 to 17, characterized in that it comprises suction means (13) placed downstream of the spraying means (18) and upstream of the exit (17), and able to drive the gaseous fluid in the flow direction.

19. The device as claimed in claim 18 as dependent on claim 14, characterized in that a turbomachine (13) is common to the stirring means and the suction means.

20. The device as claimed in claim 19, characterized in that the turbomachine is a centrifugal fan (13) which is arranged at the downstream end (8) of the mixing pipe (6), to suck in the gaseous fluid flowing in this mixing pipe (6).

21. The device as claimed in any one of claims 10 to 20, characterized in that it comprises a regulation loop (21) for regulating the outlet temperature of the gaseous fluid leaving the cooling device about a preset temperature, this regulation loop (21) comprising:

- means (22) for measuring said outlet temperature;
- means (20) for adjusting the flow rate of nitrogen supplied to the spraying means (13), and
- a regulator (23) able to actuate said adjusting means (20), from a signal transmitted by the measuring means (22).